

## AMENDMENTS TO THE CLAIMS

The following listing of claims is intended to replace all prior versions and listing of claims in the application. By this paper, claims 135, 137, 154, 168, 183, 185, 193, 195 and 203 have been amended.

### **Listing of Claims.**

1-134 (canceled).

135 (currently amended). A non-human transgenic vertebrate produced by ~~the steps of~~:

- (a) administering by injection into a testis of a male non-human vertebrate a ~~transfection mixture~~ viral vector comprising at least one polynucleotide encoding a gene product in operable linkage with a promoter ~~comprised in a virus or virus-derived DNA~~, wherein said testis contains the germ cells of the male non-human vertebrate, and wherein said germ cells are selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa; and
- (b) allowing the viral vector comprising the polynucleotide encoding a gene product to be taken up by, and released

into, the germ cells so that the released viral vector comprising the polynucleotide ~~comprised in a virus or virus-derived DNA~~ is incorporated into the genome of the germ cells of said male non-human vertebrate, wherein the polynucleotide expresses ~~an agent~~ a gene product which is of therapeutic benefit for use in human or veterinary medicine or well being or wherein the polynucleotide provides a suitable anatomical or physiological phenotype for human xenograft transplantation.

136(original). The non-human transgenic vertebrate of claim 135, wherein the polynucleotide comprises at least one biologically functional gene.

137(currently amended). A progeny non-human transgenic vertebrate, carrying in its germ cells a viral vector comprising at least one xenogeneic polynucleotide sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 135 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the viral vector comprising the ~~transfected~~ xenogeneic polynucleotide in its genome.

138(original). The progeny non-human transgenic vertebrate of claim 137, being a male comprising native germ cells carrying in their genomes at least one xenogeneic polynucleotide.

139(original). The non-human transgenic vertebrate of claim 135, which is selected from the group consisting of mammals and birds.

140(original). The progeny non-human transgenic vertebrate of claim 137, which is selected from the group consisting of mammals and birds.

141(original). The non-human transgenic vertebrate of claim 135, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, farm and marine mammals, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

142(original). The non-human transgenic vertebrate of claim 135, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

143(original). The non-human transgenic vertebrate of claim 135, wherein the mammal is a farm or marine animal.

144(previously presented). The non-human transgenic vertebrate of claim 135, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken

145-151(canceled).

152(currently amended). A transgenic non-human vertebrate, comprising germ cells carrying in their genomes a viral vector comprising at least one xenogeneic polynucleotide ~~comprised in a~~

~~virus or virus-derived DNA~~, said transgenic non-human vertebrate having received an injection in its testis ~~comprised in a virus or virus-derived DNA~~ of male germ cells comprising a viral vector comprising at least one polynucleotide encoding a desired product, ~~comprised in a virus or virus-derived DNA~~ and at least one polynucleotide encoding a genetic selection marker, said male germ cells comprising the polynucleotide being isolated or selected from a donor male non-human vertebrate with the aid of the selection marker, wherein the polynucleotide expresses a gene product ~~an agent~~ which is of therapeutic benefit for use in human or veterinary medicine or well being or wherein the polynucleotide provides a suitable anatomical or physiological phenotype for human xenograft transplantation.

153(original) The transgenic non-human transgenic vertebrate of claim 152 wherein the polynucleotide comprises at least one biologically functional gene.

154(currently amended). A progeny non-human transgenic vertebrate, carrying in its germ cells a viral vector comprising at least one xenogeneic polynucleotide sequence, ~~comprised in a virus or virus-derived DNA~~, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 152 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the ~~transfected~~ viral vector comprising the xenogeneic

polynucleotide in its genome.

155(original). The progeny non-human transgenic vertebrate of claim 154, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

156(original). The non-human transgenic vertebrate of claim 152, which is selected from the group consisting of mammals and birds.

157(original). The progeny non-human transgenic vertebrate of claim 154, which is selected from the group consisting of mammals and birds.

158(original). The non-human transgenic vertebrate of claim 152, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

159(original). The non-human transgenic vertebrate of claim 152, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

160(original). The non-human transgenic vertebrate of claim 152, wherein the mammal is a farm or marine animal.

161(original). The vertebrate of claim 152, wherein the mammal is selected from the group of a bull and a pig, and the bird is a chicken.

162-167(canceled).

168 (currently amended). A non-human transgenic vertebrate, or its progeny, comprising a native germ cell carrying in its genome a viral vector comprising at least one xenogeneic polynucleotide ~~comprised in a virus or virus-derived DNA~~, said viral vector comprising the polynucleotide having been incorporated into the genome of said germ cell through the steps of:

- (a) obtaining a male germ cell from a non-human vertebrate;
  - (b) transfecting the germ cell in vitro with a viral vector comprising at least one polynucleotide encoding a desired product ~~in the presence of a gene delivery mixture comprising at least one transfecting agent~~, and optionally a polynucleotide encoding a genetic selection marker, at about or below the vertebrate's body temperature and for a transfection-effective period of time; and
- allowing the viral vector comprising the polynucleotide encoding a desired product to be taken up by, and released into the germ cell, wherein the polynucleotide expresses gene product ~~an agent~~ which is of therapeutic benefit for use in human or veterinary medicine or well being or wherein the polynucleotide provides a suitable anatomical or physiological phenotype for human xenograft transplantation.

169(original). The non-human transgenic vertebrate of claim 168, wherein the polynucleotide comprises at least one biologically functional gene.

170(original). The progeny non-human transgenic vertebrate of claim 168, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

171(original). The non-human transgenic vertebrate of claim 68, which is selected from the group consisting of mammals and birds.

172(original). The progeny non-human transgenic vertebrate of claim 170, which is selected from the group consisting of mammals and birds.

173(original). The non-human transgenic vertebrate of claim 168, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

174(original). The non-human transgenic vertebrate of claim 168, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

175(original). The non-human transgenic vertebrate of claim 168, wherein the mammal is a farm or marine animal.

176(original). The vertebrate of claim 168, wherein the mammal is selected from the group consisting of a bull and a pig,

and the bird is a chicken.

177-182(canceled).

183(currently amended). A non-human transgenic vertebrate produced by the steps of:

- (a) administering by injection into a testis of a male non-human vertebrate a ~~transfection mixture~~ lentiviral vector comprising at least one polynucleotide encoding a gene product in operable linkage with a promoter ~~comprised in a lentivirus or lentivirus-derived DNA~~, wherein said testis contains the germ cells of the male non-human vertebrate, and wherein said germ cells are selected from the group consisting of spermatogonial stem cells, type B spermatogonia, primary spermatocytes, preleptotene spermatocytes, leptotene spermatocytes, zygotene spermatocytes, pachytene spermatocytes, secondary spermatocytes, spermatids, and spermatozoa; and
- (b) allowing the lentiviral vector comprising the polynucleotide encoding a gene product to be taken up by, and released into, the germ cells so that the released lentiviral vector comprising the polynucleotide ~~comprised in a lentivirus or lentivirus-derived DNA~~ is incorporated into the genome of the germ cells of said male non-human vertebrate.



184(previously presented). The non-human transgenic vertebrate of claim 183, wherein the polynucleotide comprises at least one biologically functional gene.

185(currently amended). A progeny non-human transgenic vertebrate, carrying in its germ cells a lentiviral vector comprising at least one xenogeneic polynucleotide sequence, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 183 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the lentiviral vector comprising the ~~transfected~~-xenogeneic polynucleotide in its genome.

186(previously presented). The progeny non-human transgenic vertebrate of claim 185, being a male comprising native germ cells carrying in their genomes at least one xenogeneic polynucleotide.

187(previously presented). The non-human transgenic vertebrate of claim 183, which is selected from the group consisting of mammals and birds.

188(previously presented). The progeny non-human transgenic vertebrate of claim 185, which is selected from the group consisting of mammals and birds.

189(previously presented). The non-human transgenic vertebrate of claim 183, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine,

farm and marine mammals, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

190(previously presented). The non-human transgenic vertebrate of claim 183, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

191(previously presented). The non-human transgenic vertebrate of claim 183, wherein the mammal is a farm or marine animal.

192(previously presented). The non-human transgenic vertebrate of claim 183, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.

193(currently amended). A transgenic non-human vertebrate, comprising germ cells carrying in their genomes a lentiviral vector comprising at least one xenogeneic polynucleotide ~~comprised in a lentivirus or lentivirus-derived DNA~~, said transgenic non-human vertebrate having received an injection in its testis ~~comprised in a lentivirus or lentivirus-derived DNA~~ of male germ cells comprising a lentiviral vector comprising at least one polynucleotide encoding a desired product ~~comprised in a lentivirus or lentivirus-derived DNA~~ and at least one polynucleotide encoding a genetic selection marker, said male germ cells comprising the polynucleotide being isolated or selected from a donor male non-human vertebrate with the aid of

the selection marker.

194(previously presented). The transgenic non-human transgenic vertebrate of claim 193 wherein the polynucleotide comprises at least one biologically functional gene.

195(currently amended). A progeny non-human transgenic vertebrate, carrying in its germ cells a lentiviral vector comprising at least one xenogeneic polynucleotide sequence, ~~comprised in a lentivirus or lentivirus-derived DNA~~, said non-human vertebrate being obtained by further breeding the male non-human vertebrate of claim 193 with a female of the same species, and selecting the bred progeny non-human transgenic vertebrate for the presence of the ~~transfected~~ lentiviral vector comprising the xenogeneic polynucleotide in its genome.

196(previously presented). The progeny non-human transgenic vertebrate of claim 195, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

197(previously presented). The non-human transgenic vertebrate of claim 193, which is selected from the group consisting of mammals and birds.

198(previously presented). The progeny non-human transgenic vertebrate of claim 195, which is selected from the group consisting of mammals and birds.

199(previously presented). The non-human transgenic

vertebrate of claim 193, which is a mammal selected from the group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

200(previously presented). The non-human transgenic vertebrate of claim 193, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

201(previously presented). The non-human transgenic vertebrate of claim 193, wherein the mammal is a farm or marine animal.

202(previously presented). The vertebrate of claim 193, wherein the mammal is selected from the group of a bull and a pig, and the bird is a chicken.

203(currently amended). A non-human transgenic vertebrate, or its progeny, comprising a native germ cell carrying in its genome a lentiviral vector comprising at least one xenogeneic polynucleotide ~~comprised in a lentivirus or lentivirus-derived DNA~~, said lentiviral vector comprising the polynucleotide having been incorporated into the genome of said germ cell through the steps of:

- (a) obtaining a male germ cell from a non-human vertebrate;
- (b) transfecting the germ cell in vitro with a lentiviral vector comprising at least one polynucleotide encoding

a desired product ~~in the presence of a gene delivery mixture comprising at least one transfecting agent~~, and optionally a polynucleotide encoding a genetic selection marker, at about or below the vertebrate's body temperature and for a transfection-effective period of time; and allowing the lentiviral vector comprising the polynucleotide encoding a desired product to be taken up by, and released into the germ cell.

204(previously prevented). The non-human transgenic vertebrate of claim 203, wherein the polynucleotide comprises at least one biologically functional gene.

205(previously prevented). The progeny non-human transgenic vertebrate of claim 203, being a male comprising native male germ cells transfected with a xenogeneic polynucleotide.

206(previously prevented). The non-human transgenic vertebrate of claim 203, which is selected from the group consisting of mammals and birds.

207(previously prevented). The progeny non-human transgenic vertebrate of claim 205, which is selected from the group consisting of mammals and birds.

208(previously prevented). The non-human transgenic vertebrate of claim 203, which is a mammal selected from the

group consisting of non-human primates, canines, felines, swine, pachyderms, equines, murine, ovines and bovine, or a bird selected from the group consisting of ducks, geese, turkeys and chickens.

209(previously prevented). The non-human transgenic vertebrate of claim 203, wherein the mammal is selected from the group consisting of wild and domesticated mammals.

210(previously prevented). The non-human transgenic vertebrate of claim 203, wherein the mammal is a farm or marine animal.

211(previously prevented). The vertebrate of claim 203, wherein the mammal is selected from the group consisting of a bull and a pig, and the bird is a chicken.